

Reissue of Patent : 6,258,082
Issued : 10 July 2001

AMENDMENTS TO THE CLAIMS

Please amend the claims as follows:

1. (Previously presented) A method of performing refractive surgery by reshaping a portion of corneal tissue, said method comprising the steps of:

selecting a gas laser generated by transverse electrical discharge in a mixture of neural gases including at least helium gas and having a pulsed output beams of predetermined mid-IR wavelength of (2.7-3.2) microns;

selecting a beam spot controller mechanism, said spot controller consisting of an internal magnetic coupler integrated inside the laser cavity having a pin-hole size of about (2-10) mm;

focusing the output beam to a spot size of about (0.05-2.5) mm on the corneal surface;

selecting a scanning mechanism for scanning said selected laser output beam;

coupling said laser beam to a scanning device for scanning said laser beam over a predetermined corneal surface area to remove corneal tissue, whereby a patient's vision is corrected by reshaping the cornea.

2. (Previously presented) A method of claim 1, in which the hydration level of said corneal surface area is controlled by a gas blower such that a consistent tissue ablation rate can be achieved.

3. (Amended) A method for improving accommodation and/or treating presbyopia comprising, ~~presbyopic patient's vision by removing a portion of the sclera tissue from an eye of a patient, said method comprising the steps of:~~

removing sclera tissue from the corneal limbus area, said removing comprising forming a pattern of radial lines in the sclera to a depth of 400-700 microns.

~~selecting an ablative laser for removing sclera tissue by focusing said ablative laser to a spot size of about (5-800) microns on the corneal surface;~~

~~selecting a scanning mechanism for scanning said ablative laser;~~

~~coupling said ablative laser to a scanning device for scanning said ablative laser over a predetermined area outside the corneal limbus to remove said sclera tissue, whereby a patient's near vision is improved by the increase of the corneal lens accommodation.~~

4. (Amended) A method of claim 3, in which said removing is performed using an ablative laser is a gas laser having an output wavelength of about (2.7-3.2) microns, energy

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per pulse of about (0.5-15) mJ on the corneal surface and a pulse duration of less than 150 nanoseconds.

5. (Amended) A method of claim 3, in which said removing is performed using ablative laser is a mid-IR solid-state laser having a wavelength of about (2.7-3.2) microns.

6. (Amended) The method of claim 3, in which said removing is performed using ablative laser includes pulsed radiation generated by a transverse electrical discharge carbon dioxide laser which is frequency-doubled into a laser having a wavelength of about (5.6-6.2) microns, energy per pulse of about (2-15) mJ on the corneal surface.

7. (Amended) A method of claim 3, in which said removing is performed using ablative laser is a diode laser having a wavelength of about 980 nm.

8. (Amended) A method of claim 3, in which said removing is performed using ablative laser is a diode laser having a wavelength of about (1.4-2.1) microns.

9. (Amended) A method of claim 3, in which said removing is performed using ablative laser is a diode-pumped Er:YAG laser having a wavelength about 2.9 microns and a pulse duration less than 500 microseconds.

10. (Amended) A method of claim 3, in which said removing is performed using ablative laser is an ultraviolet laser having wavelength of about (190-310) nm.

11. (Previously presented) A method of claim 3, in which said sclera tissue is coagulated by a laser having a wavelength of about (0.5-3.2) microns, an average power of about (0.1-5.0) W on the corneal surface, spot size of about (0.1-1.0) mm, and a pulse duration longer than about 200 seconds.

12. (Amended) A method of claim 3, in which said removing is performed using an ablative laser is fiber-coupled and combined with a coagulation laser and delivered to the corneal surface.

13. (Amended) A method of claim 3, in which said sclera tissue is ablated in said radial patterns having a length about (2.5-3.5) mm and a depth about (400-700) microns.

14. (Previously presented) A method of claim 3, in which said sclera tissue is ablated in radial patterns by a computer controlled scanning mechanism.

15. (Previously presented) A method of claim 3, in which said sclera tissue is ablated in radial patterns by a translation mechanism.

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Please add the following new claims:

16. (New) A method as in claim 3 wherein the radial lines are at least 2.5 mm in length.
17. (New) A method as in claim 3 wherein the removing is performed using a pulsed laser having a pulse duration of about 10-500 microseconds.
18. (New) A method as in claim 3 wherein the removing is performed using a laser focused to a spot size of about 5-500 microns.